



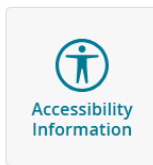
Book

Field-Effect Transistors Technology

From Sustainability to Next-Generation VLSI Design

Edited By [Ashish Raman](#), [Prabhat Singh](#), [Naveen Kumar](#), [Sarabdeep Singh](#)

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ABSTRACT

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Ashish Raman, Prabhat Singh, Naveen Kumar,
and Sarabdeep Singh

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Chapter

Future Perspectives in FETs

By Angshuman Khan, Abheek Gupta, Soumya Sen, Ashish Raman, Prabhat Singh

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ABSTRACT

The rapid advancement of semiconductor technology has been driven by continuous innovations in Field-Effect Transistor (FET) architectures, which have enabled the scaling of devices to ever-smaller dimensions. However, as traditional planar FETs approach their physical limits, new challenges such as short-channel effects, power dissipation, and quantum phenomena threaten to impede further progress. This chapter explores the future perspectives of FET evolution, focusing on emerging architectures like Vertical FETs (VFETs), Nanowire FETs (NWFETs), and 2D material-based FETs. These advanced designs offer enhanced electrostatic control, reduced leakage currents, and superior scalability, making them strong candidates for next-generation semiconductor